

REMARKS

The Office Action mailed May 31, 2006, and the prior art relied upon have been carefully studied. The claims in the application remain as claims 1-21, including those claims withdrawn from further consideration. Applicants again respectfully submit that the claims define patentable subject matter under §§102 and 103, and also meet the requirements of §112, whereby allowance is warranted. Favorable reconsideration and allowance are earnestly solicited.

Acknowledgement by the PTO of the receipt of applicants' papers filed under Section 119 is noted.

Applicants respectfully request examination of the non-elected claims. Applicants respectfully reserve the right to petition the election of species requirement up to the date of filing a Notice of Appeal.

Applicants note paragraph 3 on numbered page 2 of the Official Action. The two Japanese applications are priority applications. Priority may be claimed in any way, and priority has been acknowledged. It is applicants' understanding that reference to the priority applications in the U.S. application is not only unnecessary, but would be highly unusual. Nevertheless, applicants have no objection to

doing so. Consequently, applicants hereby authorize the examiner to insert such cross-reference by Examiner's Amendment upon allowance of the present application.

Applicants' amendment of January 11, 2006, has been criticized as introducing prohibited new matter. While applicants do not agree (because the choice of wording, while perhaps not the best, was implicitly supported by the original disclosure), nevertheless, applicants have cancelled the criticized language. Instead of "viscous" and "massive due to viscosity", applicants now use the wording "clayey", support being found for example at page 8, line 17.

Claims 3-6, 8, 10, 12, 13, 15, 17, 19 and 21 have been rejected under the first paragraph of §112 as not complying with the written description requirement. Similarly, claims 3-6, 8, 10, 12, 13, 15, 17 and 21 (but not 19) have been rejected under the second paragraph of §112. Both rejections involve criticism of the same language as discussed above with respect to alleged "new matter". These rejections are respectfully traversed.

As noted above, the criticized language has been removed. As claimed, the mixture of the primary mixture with the binder and the binder assistant in the secondary mixing, namely the "material mixture", is kneaded until it assumes a

clayey (viscous) state. This is described in applicants' specification at page 7, lines 18-26, and page 8, lines 16-19.

Claim 3 has also been criticized with respect to the wording "a number of grains". Applicants do not understand what is confusing about this. As claimed and as explained in applicants' specification at page 8, lines 20-26, the clayey forming material is formed into a fine grain state, e.g. by being crushed by rotating a crushing blade of a crushing machine. Nevertheless, in deference to the examiner's views, the language has been slightly changed to recite that "the clayey forming material is formed into a fine grain forming material."

Withdrawal of both rejections under §112 is in order and is respectfully requested.

Before addressing the prior art rejections, applicants wish to emphasize the importance in the present invention of the first recited step in claim 3, namely the primary mixing followed by the secondary mixing in which a binder and a binder assistant are added to the primary mixture. Providing the secondary mixing in which the binder and binder assistant are added to the primary mixture significantly improves the distribution of the binder in the material mixture. This in turn provides a more uniform and

homogeneous mixture and avoids problems, e.g. cracking during the rolling step.

Another important feature of the present invention is the step of forming a fine grain forming material from the clayey forming material. By crushing or comminuting the clayey forming material into a fine grain condition, the following sheet forming operation is facilitated. If the clayey material is not crushed or comminuted, it is difficult to feed so as to form into a sheet.

Claims 3, 4, 8 and 15 have been rejected under §102 as being anticipated by Endo, previously applied under §103. This rejection is respectfully traversed.

The invention as called for in claim 3 (hereinafter "claimed invention") provides a method of making a polarizable electrode for an electric double layer capacitor, comprising a mixing step including a primary mixing in which a carbonaceous powder and a conductive assistant are mixed into a primary mixture, and a secondary mixing in which a binder and a binder assistant are added to the primary mixture to be mixed into a material mixture; a kneading step in which the material mixture is kneaded into a clayey forming material; a forming step in which the clayey forming material is formed into a fine grain condition, and thereafter into a sheet of forming

material; and a rolling step in which the sheet of forming material is rolled into a thinner sheet shape.

Endo discloses a method comprising pulverizing active carbon fibers as raw material and passing the pulverized carbon fibers through a net, thereby obtaining active carbon powder. Propylene glycol is then mixed in by a spiral mixer. Subsequently, a polytetrafluoroethylene (PTFE) aqueous dispersion is added to the mixture to be kneaded into rubbery viscous mixture. The viscous mixture is fed to rollers to be rolled thereby obtaining sheet-shaped pre-formed compact.

The rejection states that the invention called for in claim 3 lacks the novelty over the method of manufacturing the sheet-shaped pre-formed compact of embodiment 1 disclosed by Endo. However, in the claimed invention, the mixing step includes the primary mixing in which a carbonaceous powder and a conductive assistant are mixed into a primary mixture and a secondary mixing in which a binder (compare to the PTFE aqueous dispersion in Endo) and a binder assistant are added to the primary mixture to be mixed into the material mixture. The kneading step is carried out after the mixing step.

On the other hand, the mixing step just includes mixing active carbon powder and propylene glycol in Endo. The mixing step in Endo is immediately followed by addition of the

PTFE aqueous dispersion and the kneading step. In this case, the components including the PTFE aqueous dispersion become viscous as the result of kneading while the PTFE does not become dispersed uniformly into the mixture of active carbon powder and propylene glycol. Consequently, the kneaded material of Endo inevitably contains parts where action of the PTFE aqueous dispersion as a binder is insufficient, so that cracks or the like tend to easily occur when the kneaded substance is rolled into a sheet-shape.

In the claimed invention, however, the primary mixing is carried out in which carbonaceous powder and conductive assistant are first mixed into a primary mixture. A binder (compare to the PTFE aqueous dispersion in Endo) and binder assistant are added to the primary mixture and secondary mixing is then carried out. The binder is evenly mixed with the mixture of carbonaceous powder and conductive assistant in the secondary mixing. As a result, the whole material is rendered uniformly viscous into a clayey state, so that the kneaded material contains no part where action of the PTFE aqueous dispersion as a binder is insufficient. Consequently, occurrence of cracks or the like are avoided during the rolling.

Furthermore, in the claimed invention, the clayey forming material obtained by the kneading is then formed into

a fine grain state, which is thereafter added and mixed with a binder. The mixture is then formed into a sheet shape.

On the other hand, in Endo, the rubbery viscous mixture obtained by kneading is fed directly to rollers (no crushing to a fine grain condition) where it is rolled into a sheet-shaped preformed compact. When the rubbery viscous mixture obtained by the kneading is directly fed to the rollers as in Endo, the viscous mixture has difficulty in entering a gap defined between paired rolls. Accordingly, there is an increased possibility that the rolling may be unsatisfactory.

In the claimed invention, however, the clayey forming material obtained by the kneading is formed into fine grain state, which is thereafter added and mixed with a binder. The mixture is then formed into a sheet shape. Consequently, since the fine grain condition of the forming material easily enters the gap defined between the rolls, the fine grain forming material can desirably be formed into a sheet shape.

Thus, the primary mixing and the secondary mixing are carried out in the claimed invention so that the binder is evenly mixed with the material. Furthermore, the forming step is carried out after the clayey forming material obtained by the kneading is formed into fine grain forming material.

However, Endo discloses or suggests nothing about the kneading step including the primary and secondary steps and forming of the clayey forming material into the fine grain of forming material. Therefore, claim 3 clearly involves the novelty over Endo.

The rejection further states that the invention claimed in each of claims 8 and 15 is anticipated by Endo. Endo discloses that 120 wt parts of liquid lubricant (propylene glycol) are added to active carbon powder. The liquid lubricant corresponds to the binder assistant recited in claim 8. Furthermore, Endo discloses that the preformed compact is heated 90°C thereby to be dried and further that the pre-formed compact is thereafter rolled at a room temperature into a sheet-shaped pre-formed compact. Endo further discloses that the sheet-shaped pre-formed compact is alternatively rolled while the temperatures of the rolls are maintained in a range of 40°C to 350°C (preferably, 90°C to 120°C). However, Endo does not disclose or suggest temperature control carried out in the kneading step.

Claims 8 and 15 depend directly or ultimately from claim 3, and therefore define novelty over Endo for the same reasons as pointed out above with respect to claim 3; and in addition, define further novel subject matter for the reasons pointed out immediately above.

Withdrawal of the rejection based on §102 is in order and is respectfully requested.

Claims 5, 6, 10, 12, 13, 17, 19 and 21 have been rejected as obvious under §103 from Endo. The rejection is respectfully traversed.

It has been pointed out above what Endo does not show what is called for in claim 3. There is nothing in Endo which would have made it obvious to modify the teachings of Endo to reach the subject matter of claim 3, and therefore it must be concluded that claim 3 would not have been obvious from Endo. Each of the rejected claims 5, 6, 10, 12, 13, 17, 19 and 21 depend directly or ultimately from claim 3, and thus incorporate the subject matter of claim 3. Consequently, all of these claims define non-obvious subject matter because of what is recited in claim 3, notwithstanding what is recited in the dependent portions of these claims.

The rejection states that Endo discloses retarding addition of the binder assistant, thereby controlling formation of the clayey forming material more desirably. However, Endo discloses or suggests nothing about addition of the binder assistant after mixing of the active carbon powder and PTFE aqueous dispersion, thus executing the kneading step after the active carbon powder and PTFE aqueous dispersion have been well mixed together.

Furthermore, the rejection states that Endo discloses the invention claimed in each of claims 10, 12 and 13. Endo discloses that fluorine containing polymer resin, 0.5 to 30 wt parts, and liquid lubricant, 95 to 150 wt parts, relative to 100 wt parts of fine carbon powder, can be selected. But there is no teaching to do what is claimed. Even if the above content ratio overlaps claims 10, 12 and 13, the inventive step of each claim should not be negated.

With respect, applicants cannot accept that what the reference does not teach or suggest is "obvious" without any evidence of such obviousness. If there is some additional prior art which shows features recited in the dependent portions of the dependent claims, then applicants should be able to face such prior art and either rebut such prior art or rebut the obviousness of combining such prior art with Endo.

Withdrawal of the rejection based on §103 is in order and is respectfully requested.

Claims 3-6, 8, 10, 12, 13, 15, 17, 19 and 21 have been provisionally rejected on the basis of obviousness-type double patenting over claims 1 and 2 of co-pending application 10/724,360. This rejection is respectfully traversed.

First, the co-pending application has now issued as U.S. Patent 7,077,932, and claims 1 and 2 of the application which matured into such patent have been cancelled.

Furthermore, the double patenting rejection is inconsistent with the election of species requirement made in the present application. If the two species in the present application are patentably distinct from one another, i.e. each is patentable over the other, then surely the claims of the present application would not have been obvious from any claims of the co-pending application.

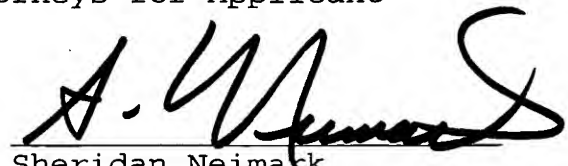
Withdrawal of the rejection is in order and is respectfully requested.

Applicants believe that all issues raised in the Office Action have been addressed above in a manner favorable to allowance of the present application. Accordingly, applicants respectfully request favorable reconsideration and early formal allowance.

Respectfully submitted,

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